DOCUMENT RESUME

ED 308 815 IR 013 875

AUTHOR Grabowski, Barbara L.
TITLE Reflections on Why Media Comparison Studies Continue To Be Conducted--with Suggested Alternatives.
PUB DATE Feb 89
NOTE 9p.; In: Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989). For the complete proceedings, see IR 013 865. For related papers, see IR 013 873-878.
PUB TYPE Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cognitive Ability; Comparative Analysis; *Computer Assisted Instruction; Cost Effectiveness; *Interactive Video; *Intermode Differences; *Media Research; *Student Motivation; Videodisks

ABSTRACT

This paper discusses media comparison studies and reasons that research of this nature is pursued, especially in the area of computer-based interactive video (CBIV). Three scenarios are presented to demonstrate instances in which the knowledge of the relative effectiveness of CBIV is important and useful: (1) the case of the administrator who requires data to help make an informed decision about major budget expenditure, i.e., macro media acquisition decisions; (2) the well designed research results that are misrepresented, very often because of ignorance on the part of the researchers; and (3) student studies that are loosely conceptualized, with a resulting proliferation of trivialized media comparison studies. It is postulated that for the main question posed in each of these scenarios, i.e., whether CBIV is effective, there are two underlying questions integral to the scenarios, whether interactive video is effective, and whether CBIV is cost-effective. It is suggested that additional studies should be conducted to compare media from an economic standpoint, and to emphasize to administrators that they actually need data on the cost of CBIV in order to determine its effectiveness. In addition, factors that enable or prohibit the medium from reaching its potential for delivering effective instruction are identified and divided into two categories, non-media-related and media-related. Finally, three important interrelated areas of study described as the new points of emphasis in considering media effectiveness are examined: instructional and motivational strategies research; message design research; and intra-medium studies. (7 references) (CGD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED308815

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Title:

Symposium: Interactive Video Symposium: The Singer or the Song-- An Extension of Clark's Media Research Discussion

Paper #2: Reflections on Why Media Comparison Studies Continue to be Conducted--with Suggested Alternatives

Author: Barbara Grabowski

IR013875

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Michael Simonson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

REFLECTIONS ON WHY MEDIA COMPARISON STUDIES CONTINUE TO BE CONDUCTED--WITH SUGGESTED ALTERNATIVES

Presented by:

Barbara Grabowski
Associate Professor
Syracuse University
330 Huntington Hall
Syracuse, New York 13244

Paper presented at the 1989 annual convention of the Association for Educational Communications and Technology.

In this portion of the symposium, I would like to present some thoughts on why we continue to read media comparison studies when the reasons for NOT doing this type of research have been widely documented in the literature for many decades. I felt that facing these issues from this perspective may shed some light on how to stop the trend, so we stop wasting more effort and opportunity especially where interactive video is concerned. Surely only by understanding the problem can we suggest some alternative approaches to studying how people learn, using media or more specifically computer based interactive video, as a research tool. Hopefully, with this understanding, we can attempt to eliminate the motivation that entices us to continue conducting this type of research.

So, why are we enticed into conducting media comparison studies to determine the relative effectiveness of computer based interactive video (CBIV)? To set the stage, consider three very common scenarios.

First, a government official enters your office and wants to know all about interactive video. He/she states, "We are considering buying interactive video for training health care providers. Tell me, is interactive video effective? For what types of learning is it effective? Is it better than stand-up lecture for teaching procedures? And what about cost? Is it cost-effective? Are there studies which can unqualifiably state that it is effective?

Second, you read an article of some well designed research study in which the researchers use CBIV to test whether X instructional or motivational strategy enhances learning and find significance. The results are well described, but in the introduction and the summary, they are misrepresented; the researchers state that their results show that CBIV is effective!

Or, finally, a doctoral student enters your office and says that his/her administrator wants to explore the effectiveness of CBIV. This student just so happens to have a pre-packaged CBIV lesson and wonders if adding this lesson will affect transfer of learning. She/he proposes a simple, quick study which sets up a comparison of traditional lecture and CBIV with an extended traditional lecture to "measure the effectiveness of CBIV."

In Scenario one, the "motivation" is a plea from administrators for data to help them make informed decisions about major budget expenditures. Compare this to the question, "Are flipcharts effective?" Administrators are not asking this type of question because the answer is not as critical to their job (and job security). Although the question implies it, administrators really are not concerned with whether or not this medium will be effective in one situation versus another. In other words, they are not concerned with making micro media selection decisions, but

rather with making macro media acquisition decisions. Media comparison studies offer answers to micro media selection questions, although they appear to offer answers to the macro questions. Whereas the research may show the treatment used on CBIV was effective, it was effective for one specific population, content area, and instructional strategy used, and the results do not offer that "guarantee" that administrators would like to have.

In Scenario two, the "motivation" is the temptation to extend the results of one's study to provide the global answers to those direct questions from administrators in scenario one. The need for answers to the media question is very great, and researchers who use media appear to have high demand results. What happens too often, unfortunately, is a misrepresentation of one's research results. What is even more unfortunate is that some researchers are not even aware of this misrepresentation.

In Scenario three, the "motivation" is the ease with which studies like this are conceptualized, conducted and analyzed. Deep, concentrated thinking to determine the true factors which are having an effect takes a great deal of effort and time. Students hear advice to first just get a study done to meet the degree requirements, and then go out and do something significant and important. Although I am realistic, I have serious concerns with this approach--the main problem being that students repeat what they know and have practiced. What results is a continuation of loosely conceptualized research, and a proliferation of trivialized media comparison studies.

What is implicit in these scenarios is that administrators need data on the main question, "is CBIV effective?" Simple-minded media comparison studies (practiced at first as a doctoral study) seem to provide them with easily obtainable data, and research which uses the medium, albeit as a research tool, translates easily into a response to that question.

For scenario one, we must help administrators either 1) rephrase their question, or 2) appropriately interpret the question they are asking. If we eliminate the question, then we will also eliminate the temptation to extend research results inappropriately to address the effectiveness of a medium issue, as we so often see as noted in scenario two. While we may never be able to eliminate the third scenario by making research easier to do (nor would we necessarily want to), we must take the leadership by not allowing the types of studies noted in scenario three to be practiced by doctoral students.

For rephrasing or reinterpreting the question, I feel that there are two underlying questions which are integral to the scenarios. "Is interactive video effective?" and, more importantly is CBIV cost- effective? Both of these questions concern me, because the first implies one right answer to a very global question, and the

second implies a comparison.

For the cost effectiveness issue, I quite heartily agree with Clark that we need to conduct more studies which compare media from an economic standpoint. This seems so obvious, that it makes me wonder why there are not more researchers focusing their efforts in the area of economic analysis. What is important, however, with this approach is to emphasize to adminstrators that when they ask the question about CBIV effectiveness, they really need data on its cost, especially where these more expensive media are concerned. The effectiveness issue is another story and needs to be dealt in a much different way and, therefore, will be the focus of the remaining portion of this paper.

How would one answer such a question as "Is CBIV effective?" that administrators are asking. Given the arguments laid out by Clark and others (Clark, 1983, 1985, Clark and Salomon, 1987, Clark, 1988, Clark and Sugrue, 1988.) in the last few decades, my response would be, "Of course, interactive video has the potential for delivering effective instruction." Implicit in this response is the fact that interactive video can also deliver very ineffective instruction.

To identify areas for research on learning with media, we should consider what factors might allow or prevent the medium from reaching its potential for delivering effective instruction. I divide these enabling or prohibitive factors into 2 categories: non-media related factors and media related factors.

For non-media related factors, interactive video will deliver effective instruction depending on

1) the appropriateness or inappropriateness of the instructional and motivational strategies used.

2) whether or not the medium delivers instruction which takes individual differences into account. Since this item is often subsumed under factor one, and thereby often ignored in research and design, I felt that it warrants a separate listing.

3) the appropriate organization of symbol systems which cultivate cognitive skills, or, in other words, appropriate message design.

For media related factors, two factors emerge. Specifically, then, interactive video may deliver effective instruction depending upon

1) whether the CBIV medium has the capability to carry the selected instructional, motivation and message design strategy.

2) whether there is medium/individual belief interaction.

By rephrasing the question "Is interactive video effective?" to "Does CBIV have the potential to carry effective instruction?" and by considering the factors that may prevent the medium from delivering effective instruction, I feel that the emphasis is shifted away from media comparison to considering the question in the spirit of Clark's argument. This shift in emphasis denotes three very important and interrelated areas of study.

1. "instructional and motivational strategies" research,

2. message design research, and

3. Intra-medium studies (medium specific studies).

The essence of Clark's argument lies in the first of these three factors in that it is the instructional design that makes a difference in learning rather than the medium. This is the clearest and most well documented of all the factors, and so I won't elaborate on this issue here except to state that in this area CBIV offers tremendous potential for functioning as a research tool because of its data collection capability, its standardization of treatments, and automatic randomization capabilities.

If instructional, motivational and message design strategies are the main determining factors of a lesson's effectiveness, then the next step it seems is to study the medium's attributes and symbol systems to determine its ability to actually relay these designated strategies. Selecting a medium which cannot deliver the design strategies is like asking a non singer like myself to sing a song, or trying to carry a couch in a Volkswagen Beetle. In both cases the "message" gets carried, but the quality of the received message has been impaired by the "medium's" capability no matter how solid the design. In other words, by understanding the medium's capability to deliver the specified instructional, motivational, and message design strategies, we won't be asking a non-singer to sing, or having a small car deliver too large of packages. What is implied here is to study the capabilities of the medium NOT to determine its effectiveness one over the other but rather to determine which of the design strategies it <u>can</u> carry. The purpose of this study would be to create a matrix which matches design strategies with specific media attributes and symbol systems. We know a great deal about the media that have been around for decades, but I don't feel that we fully understand the capabilities and symbol systems of the newer technologies as to their ability to carry some of the newer instructional strategies being suggested by the shift in emphasis to a cognitive versus a behavioral approach to learning.

One potential outcome is the identification of clusters of media attributes that cultivate cognitive skills. Clark in his 1987 address to AECT, acknowledged the potential of this approach, but remained skeptical because of the trend of this research is to find the "one" right media attribute that would indeed cultivate cognitive processes. Again, I am not suggesting that one attribute may be better from a comparison point of view, but rather that it is important to identify which ones may have that capability. The most prevalent medium which may possess those unique attributes is the computer because of its ability to emulate human cognitive processing (Kozma, 1987). Exploring the medium's potential attributes in light of the current thinking and research on generative strategies and adaptive instruction leaves me yet unconvinced that all media attributes can facilitate all types information processing by all types of learners.

An excellent example of this type of research is suggested by Kozma (1986, 1987) of Michigan in two reports--one on computers and one on video. He contends that the computer's ability to emulate human cognitive processing may supplant lacking cognitive strategies and in turn reduce the load on short term memory/ working memory and thereby increase learning. Studying CBIV as a medium to deliver instruction may contribute to our knowledge on how individual's process information and vice versa. This signifies to me an iterative, interactive and synergistic process. If we didn't study the attributes perhaps the means for delivering various strategies may be left undiscovered. Again, I find this especially true as we rethink the use of generative strategies.

The second media related factor is a medium/individual belief interaction. While I would agree with Clark that the individual holds the belief, those belief systems are caused by some external event. This factor is especially important with the increased use of computers and the phenomenon of computer phobia. The best design ever delivered via a computer will not communicate its message to someone who sits in fear of it or who has a disdain for the impersonal nature of the medium. Clark does not deny that this phobia exists, he has just identified the problem as being within the individual rather than being the medium than makes a difference. My suggestion as to how to view this factor is as an interaction between the individual and the medium--with both contributing to the resulting ineffective instruction. This implies identifying the factors both about the individual and the medium that may cause such a reaction. By learning about one, we can contribute to our knowledge about the other.

To conclude, by studying the interaction of strategies/media attributes of CBIV/individual beliefs, we may better be able to respond to the administrators in Scenario one by stating "CBIV has the potential for delivering effective, motivating instruction because it can deliver these types of instructional strategies which have been shown to be effective for these types of learners.

REFERENCES

Clark, R. E. (1983). "Reconsidering Research on Learning from Media." Review of Educational Research. 53(4), 445-460.

Clark, R. E. (1985). "Evidence for Confounding in Computer-Based Instruction Studies: Analyzing the meta-Analyses." Educational Communications and Technology Journal. 33(4), p. 249-262.

Clark, R. E. and Salomon, G. (1987). "Media in Teaching." in Whittrock, M. (ed.) Third Handbook of Research on Teaching. New York: Macmillan.

Clark, R. E. (February, 1987). "Which Technology for What Purpose? The State of the Argument about Research on Learning from Media." Paper presented at the annual conference of the Association for Educational Communications and Technology. Atlanta, GA.

Clark, R. E. and Sugrue, B. (1988). "Research on Instructional Media, 1978-1988." in D. Ely, (ed.) Educational Media and Technology Yearbook. Vol 14. Englewood CO: Libraries Unlimited, Inc.

Kozma, R. B. (1986). "Implications of Instructional Psychology for the Design of Educational Television." Educational Communications and Technology Journal. 34(1), p. 11-19.

Kozma, R. B. (1987). "Implications of Cognitive Psychology for Computer-Based Learning Tools." Educational Technology. November, p. 20-25.